COMMUNICABLE DISEASE: IT'S NOT ALWAYS THE CHICKEN

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Learning Objectives

By the end of this presentation you should:

- Have general knowledge about Amarillo Public Health and the Communicable Disease Program
- Know basic information about bed bugs/lice behavior and prevention
- Understand the importance of timely disease reporting and be familiar with the Texas State Notifiable Conditions List
- Be able to recognize some common misconceptions about diarrheal illness

Introduction

Introduction: Communicable Disease Program

- We work with our state's central and regional health departments, environmental health, various healthcare facilities, stakeholders, and labs locally and throughout Texas to investigate and report cases of illness.

CD Program Process

- Investigate
  - A lab or verbal report arrives…
  - Investigation Form
- Educate
  - Patients
  - Public
  - Providers
- Report
  - Texas Department of State Health Services (DSHS)
  - Centers for Disease Control and Prevention (CDC)

What exactly do we investigate?

- Conditions on the Texas State Notifiable Conditions List
  - Required by law to be reported to your local/regional health department

- Any plausible and suspected outbreaks or cases of illness (post diagnosis or testing) outside of:
  - Tuberculosis
  - STDs/HIV

What exactly do we investigate?

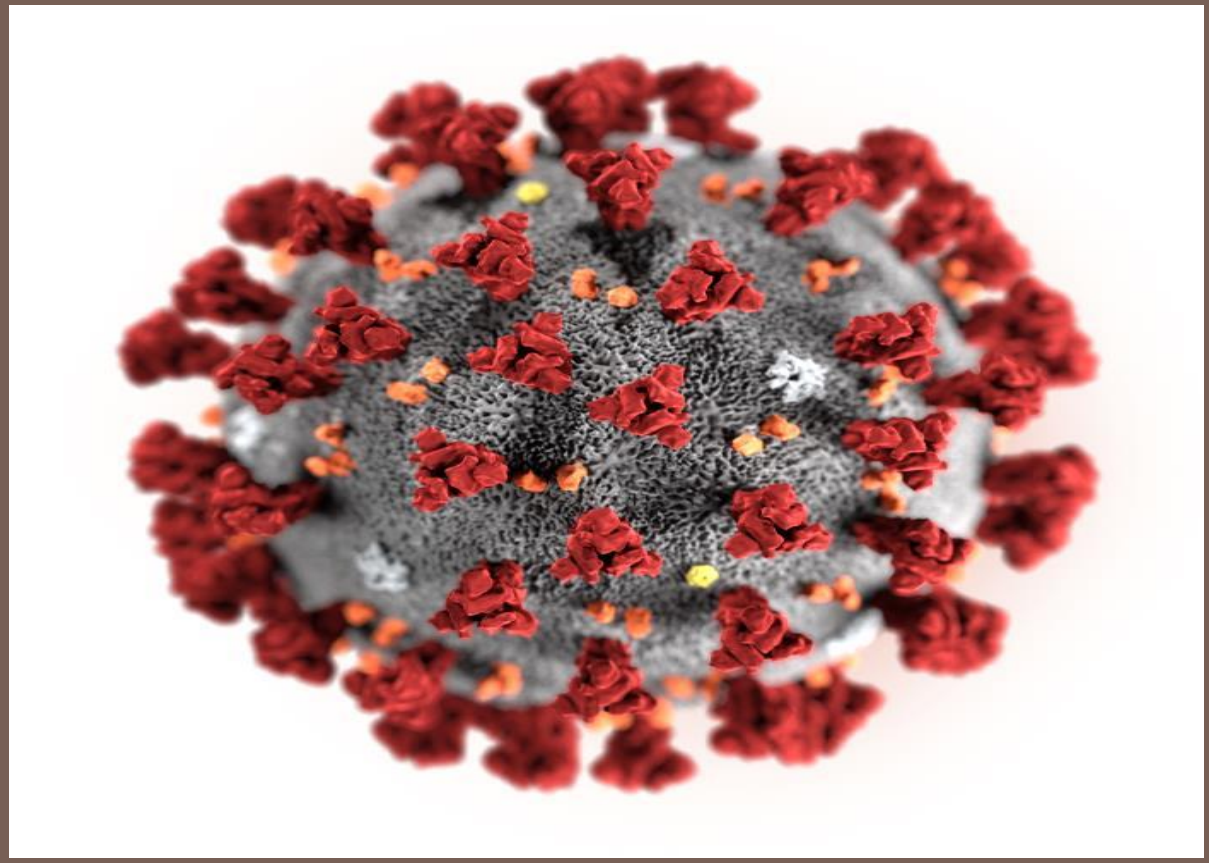
- Other things are reportable that we don't *normally* investigate
  - Cancer
  - Lead

Additional Services Offered at Public Health

- Immunizations
  - Mobile Unit
- HIV Prevention and Outreach
- Refugee Services
- STD Services
- Tuberculosis Services
- Lice Checks
- Community Education Services
  - Smoking Cessation Classes
  - Car Seat Installation/Education
- Linkage to Care

Services Not Currently Offered

- Lice Treatment
- Bed Bug Treatment
- Restaurant Inspection
- General Medical Exams
- General Laboratory Services



2019 NOVEL CORONAVIRUS

What is the current situation?

Novel Coronavirus in History

- In December 2019 an outbreak of a new (novel) coronavirus (2019-nCoV) was discovered in Wuhan City, Hubei Province, China

- In the past, there have been two outbreaks of novel coronaviruses:
  - SARS (Severe Acute Respiratory Syndrome)
  - MERS (Middle East Respiratory Syndrome)
- nCoV is not the exact same as either, but the knowledge of SARS and MERS helps researchers understand nCoV better

What is coronavirus?

- Coronaviruses are a large family of viruses
- Some cause illness in people – colds
- Others live in animals, including camels, cats and bats
- Rarely, a coronavirus found in animals can infect people

What are the symptoms of nCoV?

- The symptoms *can* include:
  - Fever
  - Cough
  - Shortness of breath

- These symptoms are similar to what a person might have when sick with the flu, or pneumonia

How does a person get nCoV?

- Respiratory droplets from coughing and sneezing
  - Similar to flu and cold spread
- Exposure to someone sick with nCoV

How does a person stay safe?

- The best way to stay safe is to avoid contact with the virus and to take steps to protect yourself from exposure
  - Avoid travel to China
  - Practice good prevention steps

Steps to Protect

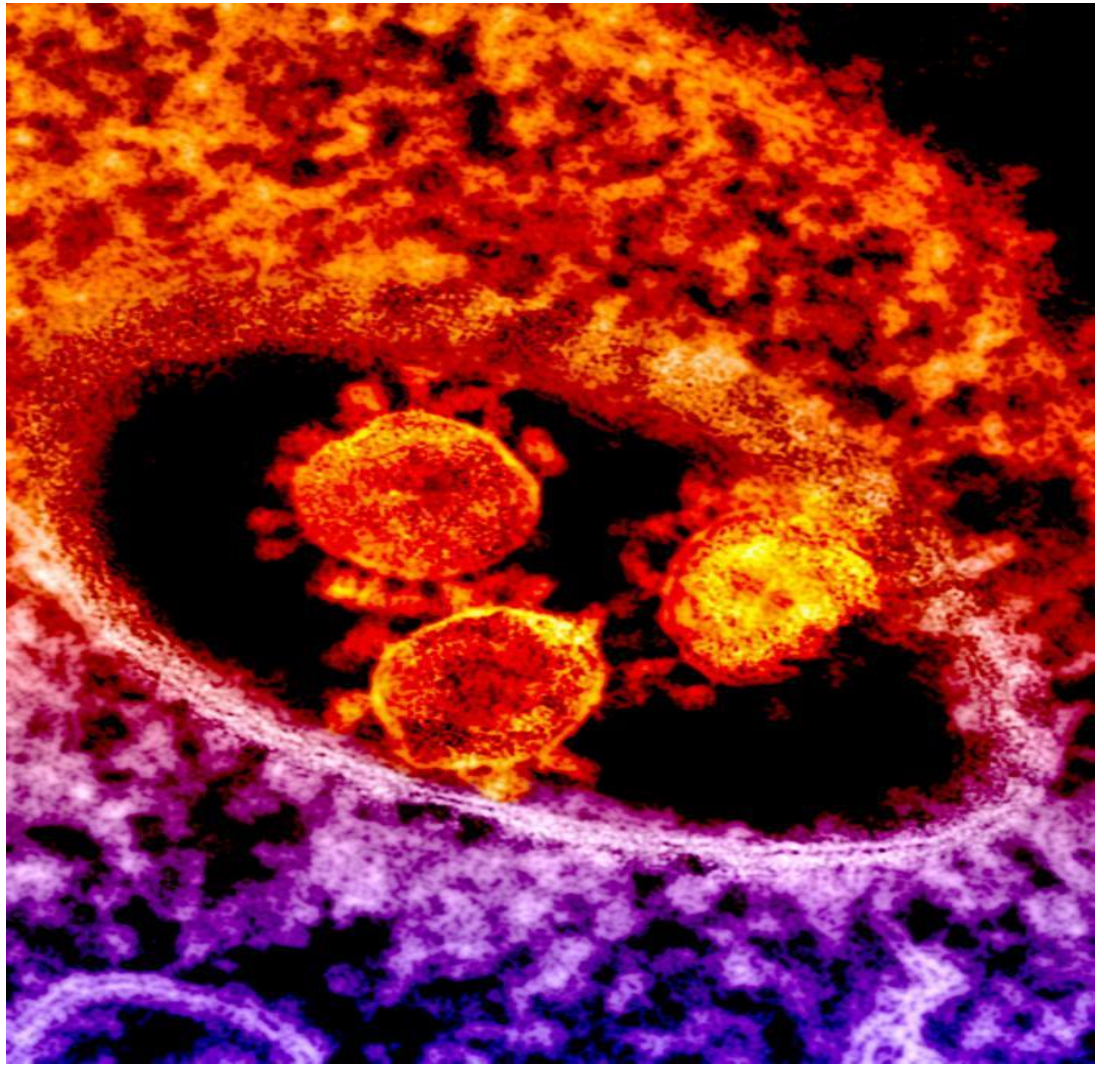
- Get a flu shot
- Wash your hands often with soap and water for at least 20 seconds
- Use a hand sanitizer (that has alcohol in it) if handwashing is not an option
- Avoid touching your eyes, nose and mouth with unwashed hands
- When wearing used gloves, make sure not to touch your face
  - Make sure to wash your hands before putting on gloves and after taking them off

Steps to Protect

- Stay home when you are sick
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash
  - If you don't have a tissue, sneeze or cough into the crook of your elbow
- Clean and disinfect objects that are touched very often like doorknobs and railings

Where can I learn more?

- The Centers for Disease Control and Prevention (CDC) here in the U.S. keeps a website on nCoV. It is updated as information becomes available
- Go to www.cdc.gov/coronavirus to find out more



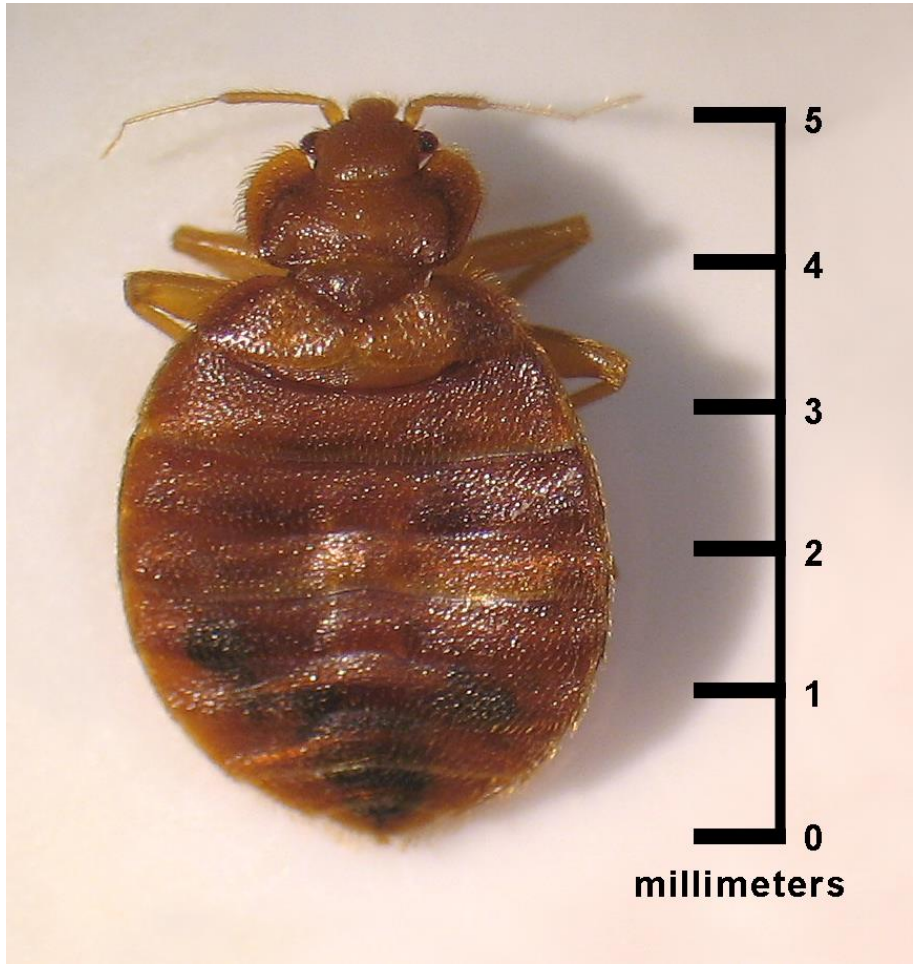
Title Photo: Illustration of 2019-nCoV Provider: CDC/Alissa Eckert, MS

Photo Right: Middle East respiratory syndrome coronavirus (MERS-CoV) virions. Provided by National Institute of Allergy and Infectious Diseases (NIAID)

Bed Bugs

Bed Bugs

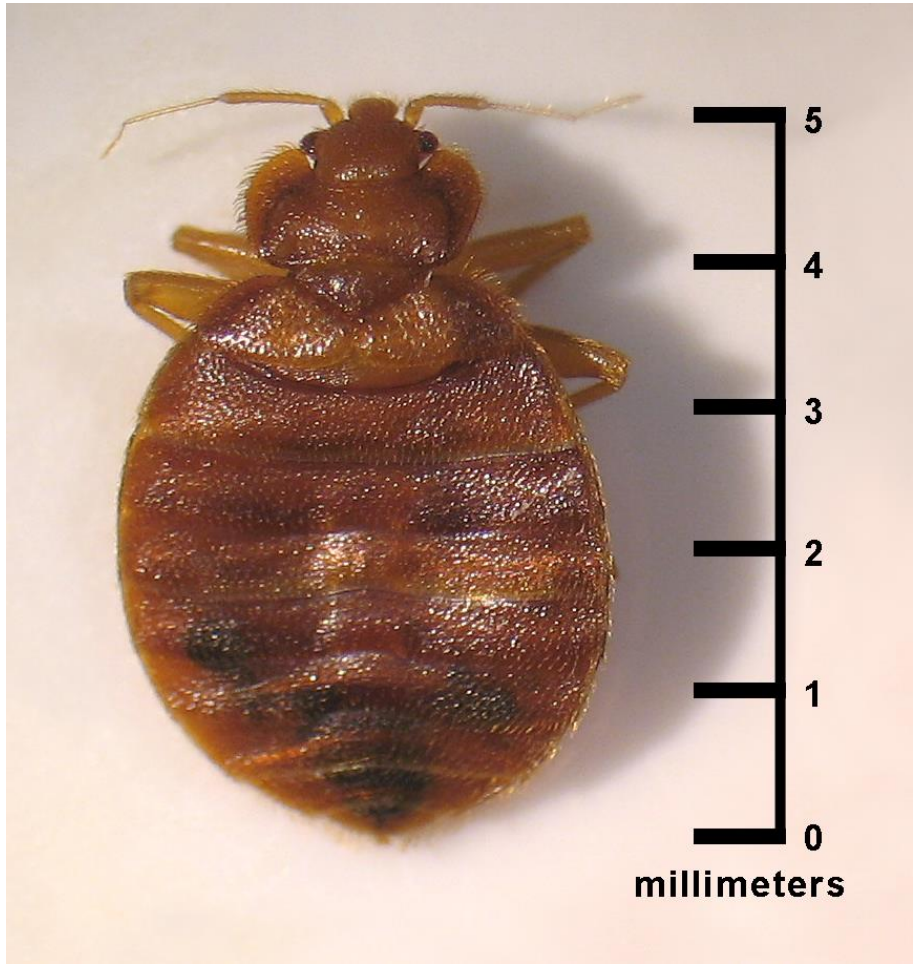
- Bed bugs are small, flat, parasitic insects that feed solely on the blood of people and animals
- Reddish-brown in color, wingless, about the size of an apple seed



Dorsal view of an adult, *Cimex lectularius* bed bug. CDC/ CDC-DPDx; Blaine Mathison. phil.cdc.gov

Bed Bugs

- Can live several months without a blood meal
- The good news is bed bugs do not transmit disease!



Dorsal view of an adult, *Cimex lectularius* bed bug. CDC/ CDC-DPDx; Blaine Mathison. phil.cdc.gov

Bed Bugs

- Their presence is not determined by the cleanliness of the living conditions
- Infestations usually occur around or near areas where people sleep
- They hide during the day in places such as seams of mattresses, box springs, bed frames, headboards, behind wallpaper, or any other clutter or objects around a bed

Bed Bugs

- The risk of encountering bed bugs increases if you spend time in places with high turnover rates of nighttime guests – such as hotels, hospitals or homeless shelters.

Bed Bug Prevention

The best way to prevent bed bugs is regular inspection for signs of infestation.

Inspect secondhand items, especially bedding and upholstered furniture before bringing them into your home.

Check hotel mattress seams for signs of bed bugs and place your luggage on tables or dressers instead of on the floor.

Signs of a Bed Bug Infestation

- Bite marks:
  - Located on the face, neck, arms, and hands
  - Red, often with a darker red spot in the middle
  - Itchy
  - Often arranged in a cluster or line

If Bed Bugs Are Suspected

Inspect sleeping areas for:

- Bed bug exoskeletons shed after molting
- Bed bugs in the fold of mattresses and sheets
- Rusty–colored blood spots (blood-filled fecal material excreted on the mattress or nearby furniture)
- A sweet musty odor

Treatment

- Treatment and Eradication
  - Launder bed linens in hot water (120^0 F minimum) and dry on hottest setting
  - Remove anything that could harbor bugs – books, magazines, electronics, stuffed animals
  - Place items that can't be washed in a plastic bag for one year

Thoroughly inspect and clean furniture:

Pull	Pull all furniture away from walls.
Dismantle	Dismantle bed frames.
Remove	Remove drawers from desks and dressers.
Turn	Turn furniture upside down to access all hiding spots.

Thoroughly inspect and clean furniture:

Scrub	Scrub all surfaces with a stiff brush to dislodge eggs.
Vacuum	Vacuum all surfaces, especially cracks and crevices on furniture and along baseboards.
Seal	Seal all holes and cracks in furniture and around baseboards.
Dispose	Dispose of vacuum cleaner bags in an outdoor trashcan.

https://www.webmd.com/skin-problems-and-treatments/guide/bedbugs-infestation#1

Professional Treatment

- Insecticides
  - Variety of products and application types are available
  - Consult a pest management specialist
  - All cracks, crevices and seams need to be treated

https://www.cdc.gov/parasites/bedbugs/index.html

Lice

Pediculosis (*Pediculus humanus capitis*)

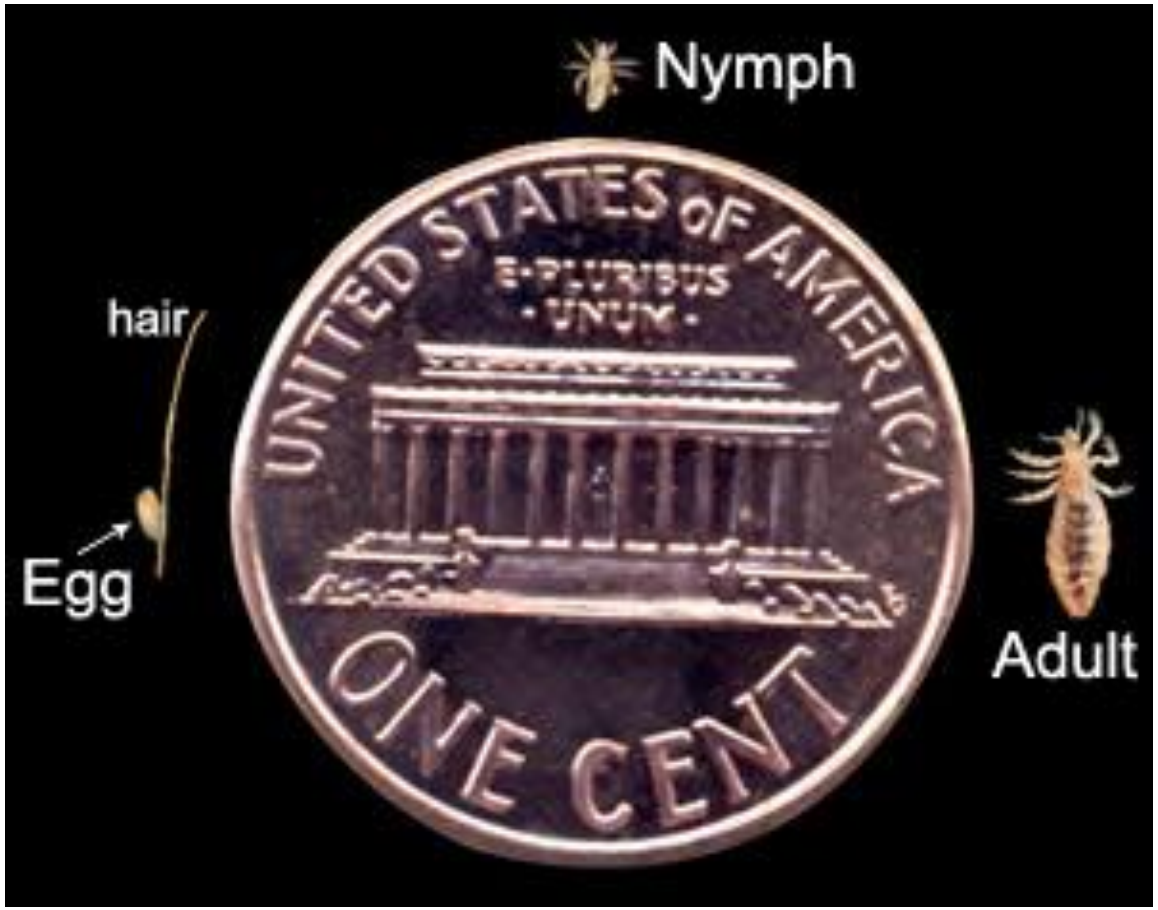
What are lice?

- Head lice are tiny bugs which live in the hair on the head.
- Head lice feed on blood by biting the scalp. This causes the itching experienced with lice.
- The same lice that live on the head do not live on the body.

How do you get lice?

- Lice crawl from the head of a person with lice to your head ("head-to-head" contact)
  - Sleepovers, playing at school or home, sports, camp
  - Claws…
- Lice crawl from a hair dressing or covering item (brush, hat, hair band etc.) to your head
  - This is less common
  - Clawwws…

What do lice look like?



- Actual size of lice in different life stages

- This is photo is owned by the CDC and is not the property of City of Amarillo

What do lice look like up close?

Caption: “Two lice viewed under an electron microscope. Note the claws used to grasp onto individual hairs.”

This is photo is owned by the CDC and is not the property of City of Amarillo.

Credit: Centers for Disease Control and Prevention, Content source: Global Health, Division of Parasitic Diseases.
www.cdc.gov/parasites/lice/head/iindex.html

Lice Facts

- The adult louse is about the size of a sesame seed, has 6 legs (each with claws), and can range from tan to brown in color

- Lice crawl from the head of a person who has lice to another head
  - Lice do not jump or hop

Lice Facts

- Just because a person has head lice, does not mean they are dirty, unclean or live in an unclean area
- Lice will only live off of a head for about two days
- Home remedies (olive oil, petroleum jelly, mayonnaise etc.) have not been proven to be effective against lice

Nits

- Nits are head lice eggs. They are hard to see and are often confused for dandruff or hair spray droplets.
  - If it can be blown or easily brushed off of the hair, it is most likely not a nit.

- Nits are “cemented” to the hair shaft and may be difficult to remove

Lice Prevention and Treatment

- Head lice and nits are found mostly on the scalp
  - Behind the ears
  - Neckline
  - Eyelashes/Eyebrows (uncommon)
- It is important to remove all nits
- Shampooing or conditioning the hair before or 1-2 days after treatment may make the treatment less effective
  - Treatments often have a period in between reapplication

Lice Prevention and Treatment

- Encourage children not to:
  - Touch heads together with any other children
  - Share hair items
- Wash clothing and bed sheets, pillowcases etc, in hot water and put in a hot dryer at least 130^0 F
  - If you can't wash, put the items in a sealed plastic bag for two weeks or more
- Do lice checks daily

Shigella Time

Timeliness and Reporting During a Shigella Outbreak

So firstly…

- What do we mean when we say reportables?

2020 Texas Notifiable Conditions List

TEXAS Health and Human Services | Texas Department of State Health Services

Texas Notifiable Conditions - 2020

Report all Confirmed and Suspected cases

24/7 Number for Immediately Reportable – 1-800-705-8868

Access List Online

Contact Information

Unless noted by*, report to your local or regional health department using number above or find contact information at *http://www.dshs.texas.gov/idcu/investigation/conditions/contacts/*

A – L	When to Report	L – Y	When to Report
*Acquired immune deficiency syndrome (AIDS) [1]	Within 1 week	Legionellosis [2]	Within 1 week
Amebiasis [2]	Within 1 week	Leishmaniasis [2]	Within 1 week
Amebic meningitis and encephalitis [2]	Within 1 week	Listeriosis [2, 3]	Within 1 week
Anaplasmosis [2]	Within 1 week	Lyme disease [2]	Within 1 week
Anthrax [2, 3]	**Call Immediately**	Malaria [2]	Within 1 week
Arboviral infections [2, 4, 5]	Within 1 week	**Measles (rubeola)** [2]	**Call Immediately**
*Asbestosis [6]	Within 1 week	**Meningococcal infection, invasive (*Neisseria meningitidis*)** [2, 3]	**Call Immediately**
Ascariasis [2]	Within 1 week	**Multidrug-resistant *Acinetobacter* (MDR-A)** [2, 7]	**Within 1 work day**
Babesiosis [2]	Within 1 week	**Mumps** [2]	**Within 1 work day**
Botulism (adult and infant) [2, 3, 8]	**Call Immediately** [8]	Paragonimiasis [2]	Within 1 week
Brucellosis [2, 3]	**Within 1 work day**	**Pertussis** [2]	**Within 1 work day**
Campylobacteriosis [2]	Within 1 week	*Pesticide poisoning, acute occupational [9]	Within 1 week
*Cancer [10]	See rules [10]	**Plague (*Yersinia pestis*)** [2, 3]	**Call Immediately**
Carbapenem-resistant *Enterobacteriaceae* (CRE) [2, 11]	**Within 1 work day**	**Poliomyelitis, acute paralytic** [2]	**Call Immediately**
Chagas disease [2, 5]	Within 1 week	**Poliovirus infection, non-paralytic** [2]	**Within 1 work day**
*Chancroid [1]	Within 1 week	Prion disease such as Creutzfeldt-Jakob disease (CJD) [2, 12]	Within 1 week

Conditions we are responsible for in CD

- Arboviral Illnesses
- Enteric Illnesses
- Hepatitis
- Illness Caused by Select Agents
- Illnesses Prevented by Immunization
- Meningitis Causing and Invasive Respiratory Diseases
- Multidrug-Resistant Organisms
- Outbreaks
- Zoonotic Illnesses
- Any other suspected cases of unusual illness

More conditions we are responsible for in CD

- Meningitis Causing and Invasive Respiratory Diseases
- Multidrug-Resistant Organisms
- Outbreaks
- Waterborne Illnesses
- Zoonotic Illnesses
- Any other suspected cases of unusual illness

Who is required by law to report?

According to the Texas Health and Safety Code:

- Health care providers
- Hospitals
- Laboratories
- Schools
- Headstart Facilities
- Daycare Facilities
- Long Term or Acute Care Facilities
- Nursing Facilities and Retirement Communities

Who is required by law to report?

Any *suspected* or laboratory confirmed conditions are also required to be reported

You can find the current notifiable conditions list at:

http://www.dshs.texas.gov/idcu/investigation/conditions/

Through the Shigella Lens

- Summer/Fall of 2019
  - Increased?
- 224 Total Investigated
- 158 Tested
- 9 Lost to Follow Up (LTFU)
- Outbreaks All Closed in 2019
- Highest Number of New Cases Received in One Day = 7

Drug resistant Shigella. Dan Higgins – Medical Illustrator; 2013 CDC/Antibiotic Resistance Coordination and Strategy Unit

Timeliness of Reporting Allows:

- A public health **response**
- **Prevention** of proliferation of disease
- Public health staff to **manage** the situation
- **Continuity** for patients and staff

Response

Timeliness allows for public health response

- Education!!!
  - Updated guidance to providers (interact with patients before we do)
    - Including laboratories
  - Updated guidance to facilities (often interacts with patients before we do and more frequently)
  - Information to patients
- Work with other departments (Environmental Health, Department of State Health Services, CDC)

Response: Shigella

- Education!!!
  - For patients during investigation
    - Older cases affect memory and prevention within a family
  - For facility stakeholders (what to do if someone else gets sick – a student or employee)
  - For providers (testing, EXCLUSION)
    - Testing and exclusion often go hand in hand

Prevention

Prevention of proliferation of illness

- Prevention of spread of the illness
  - Education and EXCLUSION
- Treatment and guidance on care to avoid poor outcomes

Prevention: Shigella

- Response measures put in place circulated and became common knowledge
- Providers and facilities spoke with patients before us and enforced EXCLUSION
- Patients and parents more aware of the illness and prevention measures. Parents began actively working to stop the spread
- Less parents LTFU, less children returning without proper testing per outbreak criteria

Manage

Public health staff to manage the situation

- Public health can accurately record case counts and additional exposures
  - Early reports translate into structured data collection
  - Outbreaks often don't start as outbreaks – they evolve
- Public health staff has a manageable caseload
  - Allows quick response to new cases

Manage: Shigella

- We have a relatively small staff…
- Split duties in a manner which allowed us to quickly respond to inquiries and concerns, and investigate new cases as they came
- We maintained data collection
  - Respond to requests for updates from Health Authority or Director
  - Report information as required to Texas Department of State Health Services and CDC
- Timely information kept us from having to retrospectively make changes and solidify the data structure

Continuity

Continuity for patients and staff

- Patient lives to continue with as little interruption as possible
  - We really don't want anyone to have to miss work or school or both. Honest.
- Facilities can return to normal operating procedures
  - Doctors offices – additional testing/education/EXCLUSION
  - Daycares, schools, offices, restaurants
- Public Health can return to baseline!

Continuity: Shigella

- Adjusted guidelines as necessary as the outbreak developed and then waned
- Worked with providers to give clear guidelines to follow
  - Light at the end of the tunnel
  - Maintained communication and fielded questions as needed
- Investigations and communication with patients continued

Misconceptions and Diarrheal Illness

Just some things we've encountered, but before we go on to that…

But before we get to diarrhea…a shameless plug

- Bacterial meningitis
  - A report of exposure
  - What to do?

But before we get to diarrhea…a shameless plug

- Viral meningitis (lots of viruses can cause; typically less severe)

- Bacterial meningitis can generally be caused by 5 different bacteria:
  - Streptococcus pneumoniae (gram positive)
  - Group B Streptococcus (gram positive)
  - Haemophilus influenzae
  - Listeria monocytogenes (gram positive)
  - Neisseria meningitidis

But before we get to diarrhea…a shameless plug

- Strep pneumoniae (gram positive)
  - Pneumococcal disease
  - Vaccine for Under 2 and Over 65
  - No prophylaxis recommended for exposure

- Group B Streptococcus (gram positive)
  - Screening and potential antibiotics for pregnant women

But before we get to diarrhea…a shameless plug

- Haemophilus influenzae
  - Vaccine generally 2-6 months
  - Complicated prophylaxis schedule if invasive type B

- Listeria monocytogenes (gram positive)
  - Foodborne
  - Concern/treatment for pregnant women, older adults, and immunocompromised

But before we get to diarrhea…a shameless plug

- Neisseria meningitidis
  - The bacterial meningitis most are worried about
  - Complicated prophylaxis based on high or low risk
    - Should be administered as soon as possible
  - Vaccines MenACWY (11 to 12), MenB (16 to 23)
    - No vaccine for X

Now onward to diarrhea!

How long?

- Often when a patient has stopped having symptoms they are STILL infectious
  - Shigella – Can shed virus for up to 4 weeks
  - Salmonella – Days to Weeks or Months
  - Campylobacter – 2 to 7 weeks
  - STEC – 1to 3 weeks depending on adult or child

How long?

- Diarrhea is more likely to spread virus than solid stools
  - Most exclusion is based on diarrhea, typically 24 hrs after diarrhea has ended
- Most of the time, the only way we can know that a person is no longer shedding virus is with a stool culture
  - Viable DNA
- Antibiotics may help shorten the time, depending on the bacteria

E coli or Shigella?

- Testing vs. characteristics
- Shigella
  - Humans!
  - Potentially more infectious
- E coli
  - Mammals and Food!
  - More likely to produce shiga-toxin
  - Shiga-toxin typically is a more pathogenic – more likely to lead to HUS
  - Shigella and Shiga-toxin are not the same

To swim or not to swim?

- Chlorine doesn't kill all bacteria instantly
- Some agents (cryptosporidium) are resistant to chlorine

- Recommended back in the pool times are longer for:
  - Crypto – 2 weeks after diarrhea stops
  - Shigella – 1 week after diarrhea stops
  - STEC (Shiga toxin-producing E. coli) – 2 weeks after diarrhea stops

What food was it?

- It is often hard to tell exactly what food made a patient sick under normal circumstances
- There are different incubations period for practically all illnesses
  - The time between exposure to the agent and presentation of illness

What food was it?

It might not be:

- What you *just* ate
  - Salmonella – incubation 6-72 hrs, avg. 12-36
- The thing that tasted funny
  - Cooked properly, stored properly, handled with clean hands
- The water – the regular water that comes out of the tap
- The one place you ate out for the week
  - Raw meat juice, raw foods, rare foods
- The chicken
- Your pet
  - Although we do ask if you have pets

What food was it?

It might be:

- The food you had just one bite of
- The meal you ate last week
- Your pet
  - Especially if your pet is a puppy, reptile, amphibian, chicken or cow
- A food you eat often
  - Steak, eggs, salsa, dough
- The chicken
- The meal you, your favorite relative or restaurant prepared
- A door handle

What food was it?

It probably was:

- The lake water you drank
- The raw seafood you ate
- That time your little one threw their hands in their pamper
  - Or sneezed in your face
- That time you forgot to wash your hands before eating
- The chicken?

In Conclusion

Bed bugs and lice – prevention is key, but treatment is possible

Report and report on time. You are the gatekeepers and experts!

We want to help and we want you well.

Thank you!

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https://amarillo.gov/departments/community-services/public-health

Chickens inside their coop. CDC/Eric Grafman, 2011.